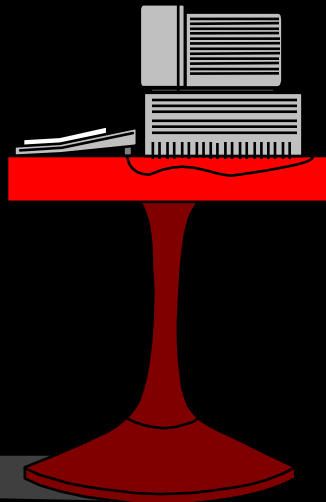
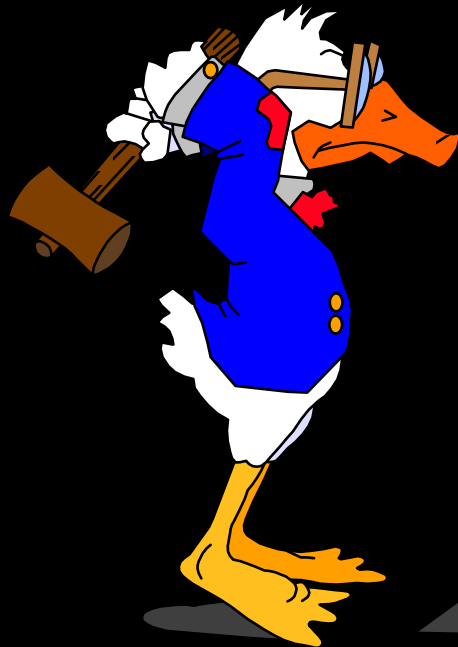


# *LOGISTICAL ESTIMATION SUPPORT*





# OVERVIEW



- To identify logistical support needs, priority of work and supply areas to be considered when determining the logistical support required for a horizontal construction the project (mission directive)



# *Learning Objectives*



- Read Learning Objectives:
  - Terminal
  - Enabling



# Method and Media



- Lecture Method
- Computer Generated Slides
- Dry Erase  
Board/demonstration
- Practical Application



# Evaluation



- 30 Question Examination
- Practical Application using each Logistical Estimation Formula



- 
- Safety
  - Cease Training





ANY QUESTIONS?



***ESTIMATIONS CAN BE DONE CERTAIN  
QUESTIONS MUST BE ANSWERED.***

***RESPONSIBILITIES FOR GAINING THIS  
INFORMATION AND PERFORMING  
THESE TASKS IS BROKEN DOWN BY  
RANK.***





# *RESPONSIBILITIES*

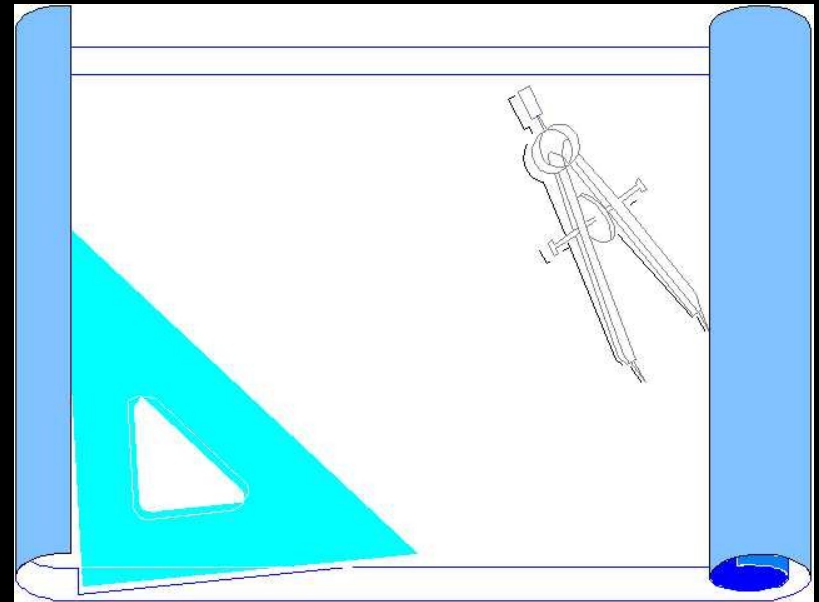
- ENGINEER OFFICER
- ENGINEER CHIEF
- ENGINEER NCO





# *ENGINEER OFFICER*

- CONDUCT SITE RECONNAISSANCE
- ORDER SURVEY
- ORDER SOIL ANALYSIS
- ORDER ENVIRONMENTAL IMPACT STUDY





# *ENGINEER OFFICER*

- ORDER GRADE STAKES TO BE PLACED AND ENVIRONMENTAL AREAS MARKED
- SUPPLY BLUE PRINT AND ENVIRONMENTAL STUDY TO CHIEF





# *ENGINEER OFFICER*

- ORDER CHIEF TO MAKE WRITTEN ESTIMATIONS FOR EACH AREA OF CONCERN
- COLLECT DATA FROM ALL CHIEFS AND FORMULATE TOTAL ESTIMATION





# *ENGINEER OFFICER*

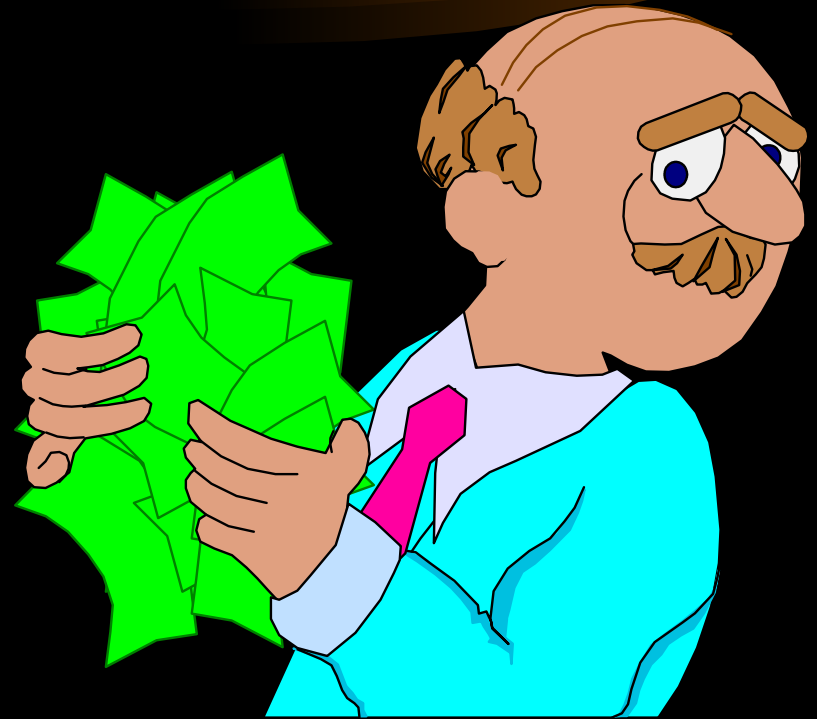
- IDENTIFY CONSTRUCTION REQUIREMENTS / LIMITATIONS / RESTRICTIONS
- USE CRITICAL PATH METHOD TO PLAN PROJECT
- ISSUE ORDERS TO CONDUCT





# *ENGINEER CHIEF*

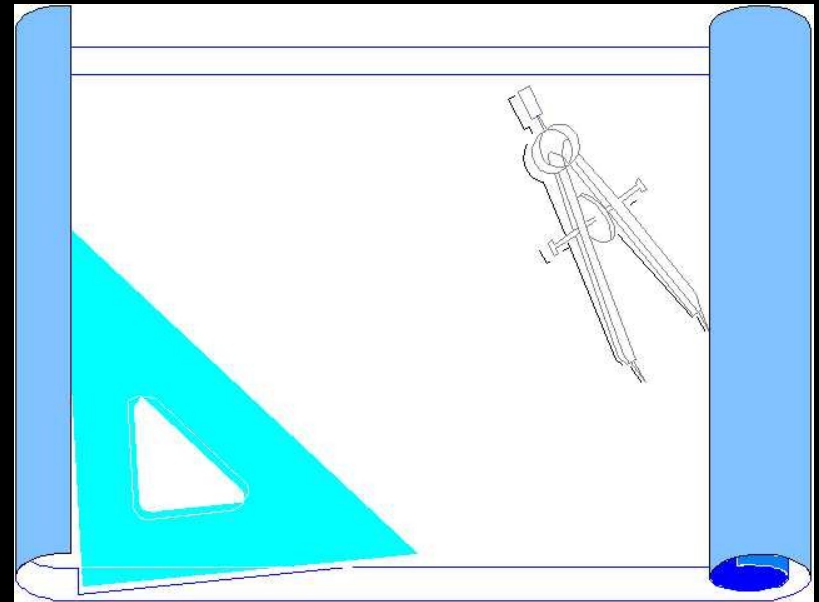
- CONDUCT SITE RECON.
- READ SURVEY (BLUE PRINT)
- GET SOIL ANALYSIS INFO
- VIEW ENVIRONMENTAL IMPACT STUDY





# *ENGINEER CHIEF*

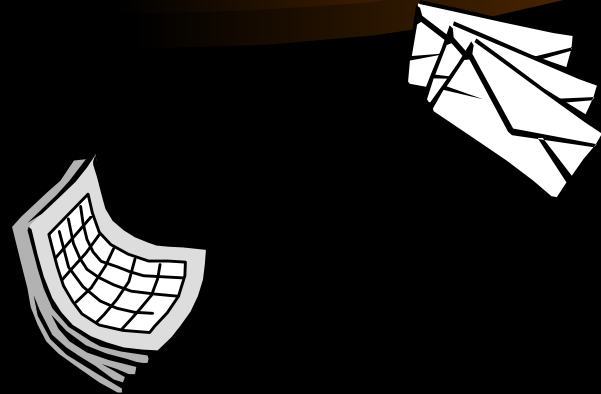
- MAKE ESTIMATIONS OFF OF MEASUREMENTS GIVEN IN BLUE PRINT





# *ENGINEER CHIEF*

- MAKE MATHEMATICAL ESTIMATIONS FOR EQUIPMENT, PERSONNEL, TIME, AND MATERIALS
- PLAN ORDER OF WORK USING CRITICAL PATH





# *ENGINEER CHIEF*

---

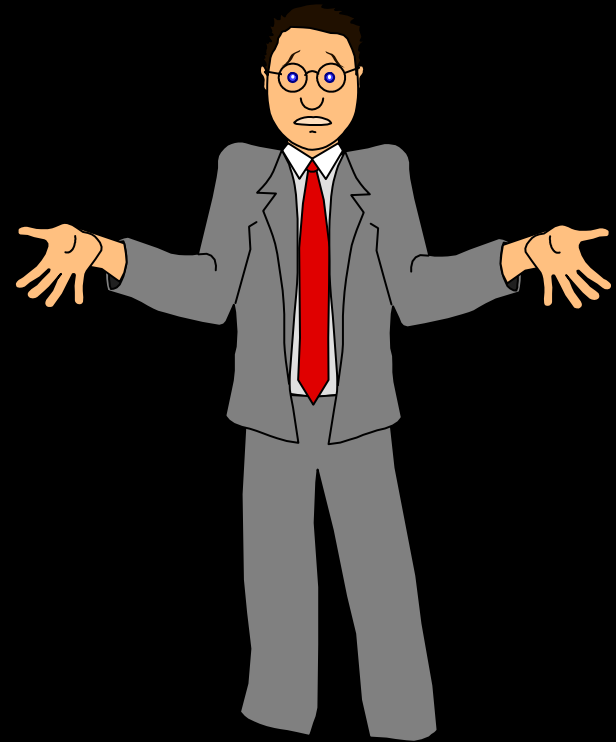
- RETURN WRITTEN ESTIMATION TO ENGINEER OFFICER
- ISSUE THE ORDER TO THE NCO'S TO EMPLOY EQUIPMENT





# *ENGINEER NCO*

- REQUEST THE SUPPORT OF FUEL, OILS, WATER AND CHOW
- COORDINATE EQUIPMENT TO AND AT THE JOB SITE
- SUPERVISE CREWS AND





# *QUESTIONS?*



- Any Questions??



# *ESTIMATING LOGISTICS*





# *LOGISTICAL ESTIMATIONS*

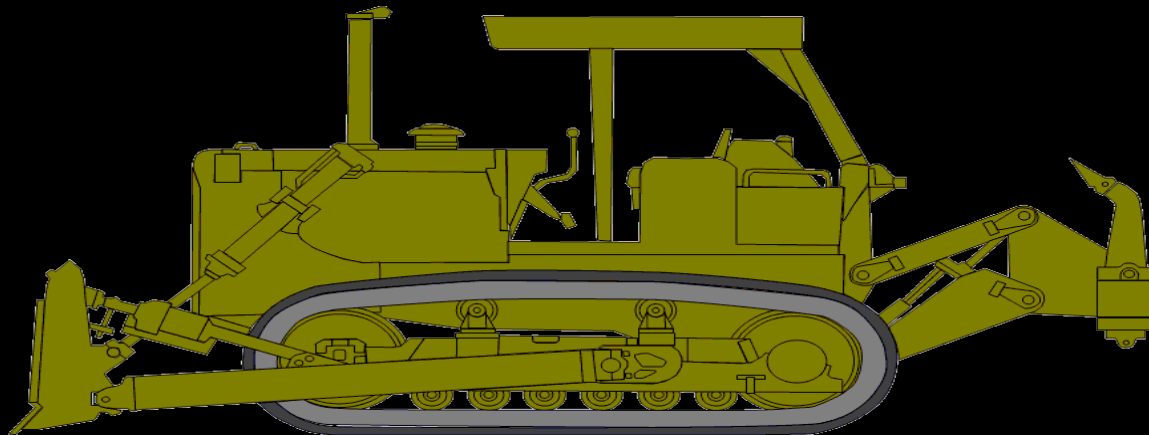


- TO MAKE THE WRITTEN ESTIMATIONS REQUIRED, THE FOLLOWING FORMULAS MUST BE USED




# *FUEL CONSUMPTION*

- # \_\_\_\_\_ X \_\_\_\_\_ X \_\_\_\_\_ X \_\_\_\_\_ =
- # OF EQUIP X GALS/HR X HRS/DAY X # OF DAYS =  
TOTAL GALS OF FUEL





*USE TABLE #1 FOR  
GALS PER HOUR FOR  
EACH TYPE OF  
ENGINEER EQUIPMENT*



ADD TOTALS FOR EACH TYPE  
OF EQUIPMENT TOGETHER  
TO GET TOTAL FUEL  
REQUIREMENT



# *FUEL CONSUMPTION*

**TABLE #1 FUEL CONSUMPTION**

EQUIPMENT	TYPE OF FUEL	GALS/HOUR
LOADER 624KR	DIESEL/JP8	6.00
MAC 50 (ATC)	DIESEL/JP8	6.00
GRADER (120M)	DIESEL/JP8	4.00
COMPACTOR(563D)	DIESEL/JP8	4.00
SCRAPER (621B)	DIESEL/JP8	10.00
DOZER (1150E)	DIESEL/JP8	6.00
DOZER (1155E)	DIESEL/JP8	6.00
DOZER (MCT)	DIESEL/JP8	8.00
BACKHOE (420E)	DIESEL/JP8	4.00



# *DEMONSTRATION*

## *SEE EXAMPLE IN HANDOUT*



TOTAL FUEL CONSUMPTION FOR 3  
SCRAPERS (621B) WORKING 12  
HR/DAY FOR 10 DAYS AND 2 TRAMS  
(624KR) WORKING 12 HR/DAY FOR 4  
DAYS, ALSO 2 GRADERS (120M)  
WORKING 12 HR/DAY FOR 13 DAYS



# SOLUTION

- EQUIP **X** GALS/HR **X** HRS/DAY **X** #DAYS  
= TOTAL FUEL REQUIRED

– 621B 3 **X** 10 **X** 12 **X**

10 = 3,600

– 644E 2 **X** 6 **X** 12 **X**

4 = 576

– 130G 2 **X** 4 **X** 12 **X**

13 = 1,248

TOTAL = 5,424 GALS



# *WHAT HAVE YOU LEARNED*



- WORK THE  
“WHAT HAVE  
YOU LEARNED”  
PROBLEM IN  
YOUR STUDENT  
HANDOUT



# SOLUTION

- EQUIP  $\times$  GALS/HR  $\times$  HRS/DAY  $\times$  #DAYS =  
TOTAL FUEL REQUIRED

$$- 3 \quad \times \quad 8 \quad \times \quad 10 \times 8 = 1,920$$

$$- 2 \quad \times \quad 4 \quad \times \quad 10 \quad \times \quad 3 =$$
$$240$$

$$- 1 \quad \times \quad 10 \quad \times \quad 10 \quad \times \quad 2 =$$
$$200$$

TOTAL =

2,360 GALS



*P. O. L.*



ONCE TOTAL GALLONS OF  
FUEL HAVE BEEN  
COMPUTED ALL OTHER  
P.O.L. REQUIREMENTS CAN  
BE ESTIMATED



# *P.O.L. STEP 1*



- 10 WT THROUGH 50 WT

$$\begin{array}{l} .02 \\ \text{OE} \end{array} \text{ X TOTAL GALS FUEL} = \text{TOTAL}$$



## *P.O.L STEP 2*



- 80 WT THROUGH 90 WT

$$\begin{array}{l} .005 \text{ X TOTAL GALS FUEL} \\ \text{TOTAL GO} \end{array} =$$



## *P.O.L STEP 3*



- GREASE OR GAA

- STEP 1 DETERMINE ESTIMATED METER HOURS

$$\begin{array}{l} \# \text{ OF EQUIP } \times \text{ HR/DAY } \times \text{ \#DAYS } \\ = \\ \text{EST METER HOURS} \end{array}$$



## *P.O.L STEP 3 CONT.*

EST METER HOURS

8

X .25 = GAA

LBS

The 8 is for 8 hours on the meter the .25 is for 1/4 lbs. of grease for every 8 meter hours.



## *EXAMPLE*



2 GRADERS (120M) WITH AN  
ESTIMATED TOTAL FUEL  
CONSUMPTION OF 1,248 GALS, AND  
AN ESTIMATED 13 TOTAL DAYS  
OPERATED.



# *SOLUTION*

10 WT THROUGH 50 WT

.02 X 1,248 EST FUEL NEEDED = 24.96 OR 25  
GALS OE

80 WT THROUGH 90 WT

.005 X 1,248 EST FUEL NEEDED = 6.24 OR 7  
GALS GO

GREASE OR GAA



# *WHAT HAVE YOU LEARNED*



- WORK THE “WHAT  
HAVE YOU  
LEARNED”  
PROBLEM IN YOUR  
STUDENT  
HANDOUT



# *SOLUTION*



3 TRAMS (624KR)

.02 X 3,500 EST FUEL NEEDED = 70 GALS  
OE

.005 X 3,500 EST FUEL NEEDED = 17.5 OR 18  
GALS OE

3 Trams X 7 HRS/DAY X 8 DAYS = 168 EST  
MTR HRS

EST METER HRS



# *SOLUTION CONT.*

2 420E

.02 X 1,200 EST FUEL NEEDED = 24 GALS  
OF OE

.005 X 1,200 EST FUEL NEEDED = 6 GALS OF  
GO

2 420E X 7 HR/DAY X 8 DAYS = 112 EST  
MTR HRS

EST METER HRS

112

8 X .25 = 3.5 OR 4 LBS GAA



# *SOLUTION CONT.*



	OE GAL	GO GAL	GAA LBS
TRAM	70	18	6
420D	24	6	4
TOTALS	94	24	10



# *WATER CONSUMPTION*

---

- POTABLE
- NON-POTABLE





# *WATER CONSUMPTION*



- USE TABLE #2 TO COMPUTE WATER REQUIREMENTS FOR:
  - SOIL PREPARATION AND DUST CONTROL (NON-POTABLE)
  - EQUIPMENT (NON-POTABLE)
  - DRINKING (POTABLE)
  - PERSONAL HYGEINE (POTABLE)
  - SHOWERS (POTABLE)
  - LAUNDRY (POTABLE)



# *SOIL PREPARATION AND DUST CONTROL*

NON-POTABLE

TOTAL SQ. YD.  $\times$  1 GAL/SQ. YD.  $\times$  1.10  
WASTE = GALS REQ





# *EQUIPMENT FORMULA*



NON-POTABLE

$$\begin{array}{l} \text{QTY OF EQUIP} \times 1 \text{ GAL/DAY} \times \text{EST DAYS} \times 1.10 \\ \text{WASTE} = \\ \text{GALS REQ} \end{array}$$



# *SHOWERS FORMULA*

- POTABLE



- $$\begin{array}{l} \# \text{ PERSONNEL} \times \text{TABLE 2} \times 1.10 \\ \text{WASTE} = \text{GALS} \\ \text{REQ} \end{array}$$



# *LAUNDRY FORMULA*



- POTABLE
- $\# \text{ PERSONNEL} \times \text{TABLE 2} \times \text{DAYS} \times 1.10$   
WASTE  
 $= \text{GALS REQ}$



# *HYGIENE FORMULA*



- POTABLE
- # PERSONNEL X TABLE 2 X DAYS X 1.10  
WASTE  
= GALS REQ



# *DRINKING WATER FORMULA*



POTABLE

# PERSONNEL **X** TABLE 2 **X** DAYS **X** 1.10  
WASTE = GALS REQ



## *EXAMPLE*



ESTIMATE THE WATER CONSUMPTION FOR 250 PERSONNEL WORKING FOR 28 DAYS IN A HOT CLIMATE. COMPUTE THE REQUIREMENT FOR 50 VEHICLES. YOU WILL BE WORKING ON A ROAD THAT IS 4,000' LONG AND 28' WIDE FROM DITCH TO DITCH.



# *SOLUTION*

## *SOIL PREPARATION*



NON POTABLE

4,000' L X 28' W

9

= 12,444.44 OR

12,445 SQ YD

12,445 SQ YD X 1 GAL X 1.10 = 13,689.5 OR



# *SOLUTION CONT. EQUIPMENT*



NON POTABLE

50 VEHICLES X 1 GAL/DAY X 28 DAYS X 1.10 WASTE  
=  
1,540 GALS



# LAUNDRY AND SHOWERS



POTABLE

Laundry:

250 PERSONEL X 2.1 GAL/DAY X 4 DAYS X 1.10  
WASTE = 2,310 GALS

Showers:

250 PERSONEL X 1.0 GAL/DAY X 4 DAYS X 1.10  
WASTE = 1,100 GALS



# *SOLUTION CONT. HYGIENE WATER*

POTABLE

$$\begin{array}{l} 250 \text{ PERSONS} \\ \text{WASTE} \\ \text{GALS} \end{array} \times 1.7 \text{ GAL/DAY} \times 28 \text{ DAYS} \times 1.10 = 13,090$$



# *SOLUTION CONT. DRINKING WATER*



POTABLE

250 PERSONS X 3 GALS/DAY X 28 DAYS X 1.10  
WASTE =

23,100 GALS



# *Table for Water Consumption*

	POTABLE	NON-POTABLE
SOIL PREPARATION		13,690
EQUIPMENT		1,540
LAUNDRY	2,310	
SHOWERS	1,100	
HYGEINE	13,090	
DRINKING WATER	23,100	
<u>TOTALS</u>	39,600	15,230



# *WHAT HAVE YOU LEARNED*



- WORK THE “WHAT  
HAVE YOU  
LEARNED”  
PROBLEM IN YOUR  
STUDENT  
HANDOUT



# *SOLUTION*



SOIL PREP

6,099' L X 24' W

9

= 16,264 SQ YD

16,264 SQ YD X 1 GAL X 1.10 WASTE = 17,891  
GALS



## *SOLUTION CONT.*



EQUIPMENT

25 VEHICLES X 1 GAL/DAY X 60 DAYS X 1.10

=

1,650 GALS



## *SOLUTION CONT.*



LAUNDRY ( ONCE A WEEK)

$$75 \text{ MEN } \times 2.1 \text{ GAL/MAN } \times 8 \text{ DAYS } \times 1.10 =$$

1,386 GALS



## *SOLUTION CONT.*



SHOWERS (ONCE PER DAY)

$$75 \text{ MEN} \times 1.0 \text{ GAL/MAN} \times 60 \text{ DAYS} \times 1.10 =$$

4,950 GALS



## *SOLUTION CONT.*



### PERSONAL HYGIENE

75 MEN X 1.7 GAL/MAN X 60 DAYS X  
1.10 =

8,415 GALS



## *SOLUTION CONT.*



DRINKING

75 MEN X 3 GAL/MAN X 60 DAYS X 1.10

=

14,850 GALS



# *SOLUTION CONT.*

	<b>POTABLE</b>	<b>NON- POTABLE</b>
<b>SOIL PREPARATION</b>		<b>17,891</b>
<b>EQUIPMENT</b>		<b>1,650</b>
<b>LAUNDRY</b>	<b>1,386</b>	
<b>SHOWERS</b>	<b>4,950</b>	
<b>HYGEINE</b>	<b>8,415</b>	
<b>DRINKING WATER</b>	<b>14,850</b>	
<b><u>TOTALS</u></b>	<b>29,601</b>	<b>19,541</b>



# *MEALS READY TO EAT*



- Most common form of sustenance
- Easy to carry/transport



# *MRE FORMULA*



#PERSONNEL X 3 MEALS/DAY X #OF  
DAYS =

TOTAL # OF MEALS

TOTAL # OF MEALS

12

= TOTAL # OF

CASES



## *EXAMPLE*



THE UNITS SIZE IS 175 PERSONNEL,  
WORKING 60 DAYS, DETERMINE THE  
QUANTITY OF MEAL READY-TO-EAT, BY  
THE CASES.



# *SOLUTION*



- 175 PERSONNEL X 3 MEALS/DAY X 60 DAYS = 31,500 TOTAL MEALS
- 31,500 TOTAL MEALS / 12/CASE = 2,625 CASES



# *WHAT HAVE YOU LEARNED*



- WORK THE “WHAT  
HAVE YOU  
LEARNED”  
PROBLEM IN YOUR  
STUDENT  
HANDOUT



# *SOLUTION*



- 30 PERSONNEL  $\times$  3 MEALS/DAY  $\times$  20 DAYS = 1800 TOTAL MEALS
- 1,800 TOTAL MEALS / 12/CASE = 150 CASES



# *PRACTICAL APPLICATIONS*



- Worksheet 1
- Worksheet 2
- Worksheet 3



*QUESTIONS?*

A horizontal blue line with rounded ends, extending across the width of the slide. To the right of the line, there is a large, brown, comet-like tail that tapers to a point on the right edge of the slide. The tail has a gradient from dark brown to a lighter, more orange-brown at the tip.



# *SUMMARY*

